



Arkansas Department of Health

GROUND WATER RULE

Ground Water Rule (GWR) Overview

- Applies to all Public Water Systems (PWS) serving ground water to provide an additional barrier for pathogens
- Effective December 2009 (40 CFR § 141 Subpart S)
- Wholesale systems supplying ground water
- Consecutive systems buying ground water
- Mixed systems using both ground water and surface water
- Does not apply to systems who combine all their ground water with surface water (or groundwater under the influence of surface water) prior to treatment meeting Subpart H (Surface Water Treatment Rule)



GWR Components

- 1. Compliance Monitoring or Source Water Monitoring
 - A) Triggered Monitoring
 - B) Assessment Monitoring
- 2. Sanitary Surveys
- 3. Corrective Action

Compliance Monitoring

- Treatment to 4 log (99.99%) inactivation and/or removal of viruses
- Monitoring requirements
 - >3,300 pop. monitor continuously
 - ≤3,300 pop. monitor daily
 - State assigned minimum residual disinfection concentration
 - State approved location

Compliance Monitoring

- > 3,300 people served

- Continuously monitor residual disinfectant concentration and record its lowest reading each day

- If equip. fails: grab samples every 4 hours until return to service

- System must resume continuous monitoring within 14 days

Compliance Monitoring

- ≤ 3,300 people served
 - Collect grab sample during the hour of peak flow or other state-specified time each operating day
 - If daily grab sample falls below the specified minimum residual, follow-up samples must be taken every 4 hours until the residual is returned to the state-determined minimum level.
 - May monitor and record continuously

GWR CT Conditions

Maximum pH ≤ 9

Minimum Temp ≥ 14 C

Plant/Well Flow ≤ 2000 gpm

High Service Flow ≤ 3800 gpm

Clearwell Depth ≥ 7 FT

TRIGGERED MONITORING

- Required for any Public Ground Water System (GWS) that is not conducting GWR compliance monitoring for 4-log treatment of viruses
- Triggered by a TCP Routine sample under the Revised Total Coliform Rule (RTCR)
 - Sample(s) must be collected from each source in use at the time within 24 hours of notification. The number of samples needed will be indicated on the resample letter.
 - Applies to wholesale & purchase systems, too

Monday, December 07, 2009

ANYTOWN WATERWORKS
JOHN SMITH
1905 VIRUS WAY
ANYTOWN, AR 72990

PWS# 999

Example Report: Routine Distribution TC+ Result – Triggers Collection of Raw Sample(s)

RE: GWR Triggered Monitoring

Dear: JOHN SMITH

Your system or a public water system which purchases water from you has had either a total coliform positive result on one or more of the routine monthly distribution system samples collected for compliance with the TCR, or your system has had an E. coli positive raw water sample (see results below).

The **Ground Water Rule** requires that you collect at least one raw water sample either on the combined raw water line prior to treatment at each water treatment plant or from each of your well(s) that were in operation on the date the TCR compliance sample(s) was collected. This notice approves you to monitor at either location. Additionally, if source sample(s) are E. coli positive, additional source monitoring will be required.

9 BOTTLE(S) ARE BEING SENT TO YOU FOR GROUNDWATER SOURCE SAMPLING

System Name: ANYTOWN WATERWORKS									
<u>Lab No.</u>	<u>Site</u>	<u>Site Address</u>	<u>County</u>	<u>Collected</u>	<u>Time</u>	<u>Received</u>	<u>Time</u>	<u>Collected By</u>	
1014307	999B001	ANYTOWN GENERAL STORE 1212 H2O ST.	ARKA	12022009	0800	12032009	0742	J SMITH	
<u>Specimen code</u>	WEL	<u>Purpose</u>	REG	<u>Category</u>	PUB	<u>Rejection</u>	<u>Result:</u>	P EA	TOTAL COLIFORMS E. coli
							<u>Present</u> <u>Absent</u>		
<u>Comments:</u>									
<u>Actions to Take:</u> The sample above has triggered source water monitoring for your system. You must collect a single sample from either a raw water tap on the combined raw water header prior to treatment at each of your water treatment plants or a single sample from a raw water tap at each of your wells that were <u>in operation on the day that the above distribution sample was collected</u> .									
The sample(s) must be collected within 24 hours of receiving this notice.									

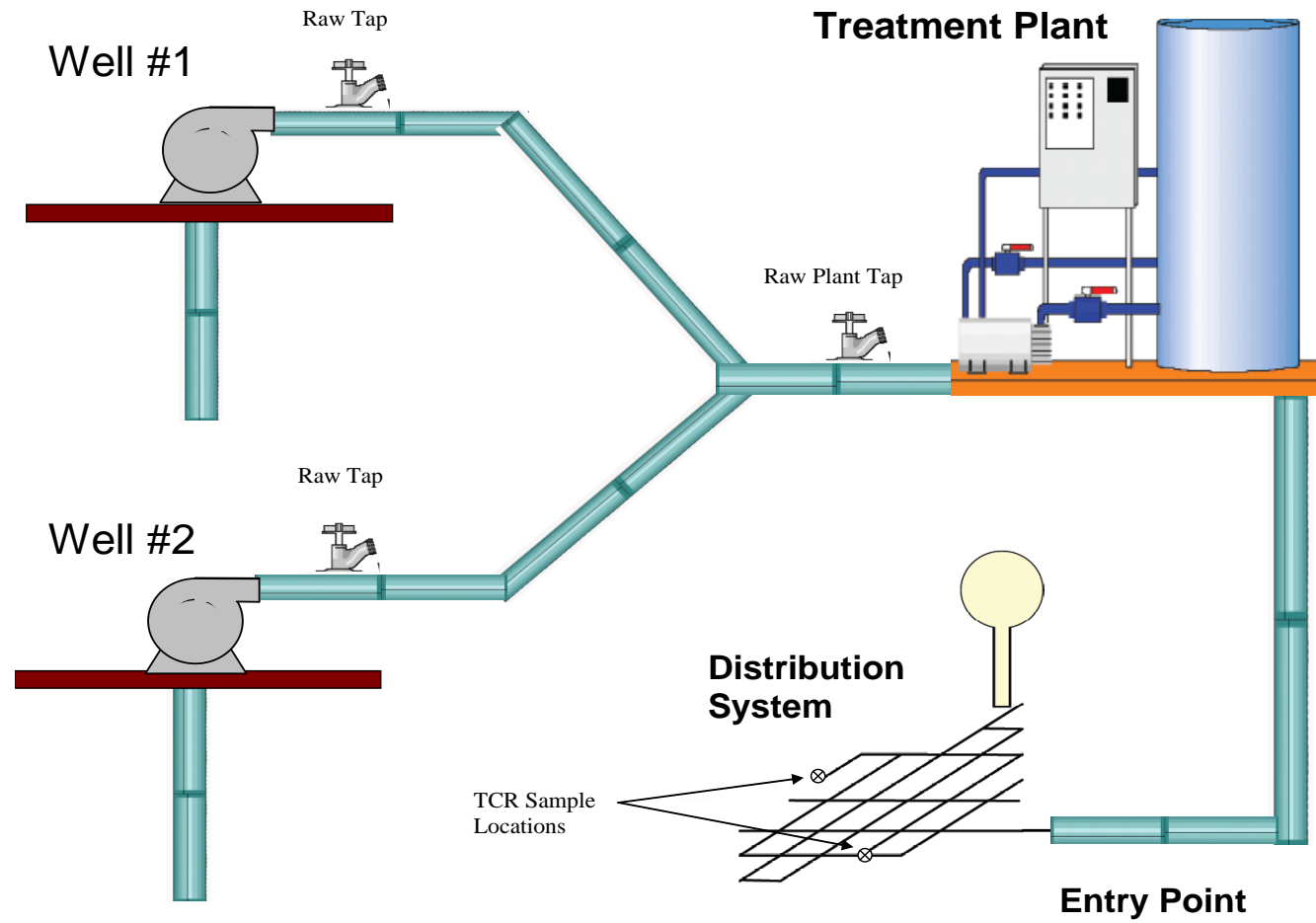
Chlorine Residual: 0.3

Select the Site Code and Sample Location from the list of your treatment plant(s) and well(s) below: Enter in the "Site Code" box and "Definite Location of Sample" box on the bacti report form exactly as shown.

	<u>Site Code</u>	<u>Location</u>
WTP:	99901	WTP #1 (DOWNTOWN)
WTP:		
WTP:		
WTP:		
WTP:	99902	WTP #2 (MT HOLLY)

	<u>Site Code</u>	<u>Location</u>
WELL:	999101	WELL #10A
WELL:	999102	WELL #11
WELL:	999103	WELL #12A
WELL:	999104	WELL #15
WELL:	999201	WELL #17





The **Ground Water Rule** requires that you collect at least one raw water sample either on the combined raw water line prior to treatment at each water treatment plant or from each of your well(s) that were in operation on the date the TCR compliance sample(s) was collected. This notice approves you to monitor at either location. Additionally, if source sample(s) are E. coli positive, additional source monitoring will be required.

BOTTLE(S) ARE BEING SENT TO YOU FOR GROUNDWATER SOURCE SAMPLING

System Name: ANYTOWN WATERWORKS

Lab No.	Site	Site Address	County	Collected	Time	Received	Time	Collected By		
1014948	99901	WHS #1 (DOWNTOWN)	ARKA	12092009	0845	12102009	0752	J SMITH		
Specimen code	WEL	Purpose	RWE	Category	PUB	Refraction	Result:	P EP	TOTAL COLIFORMS E. COLI	Present Present

Comments:

Chlorine Residual: 0.0

Actions to Take:

The above raw water sample was E. coli positive. You must conduct additional monitoring at each well represented by this sample. If one well is represented by this sample, collect 5 additional raw water samples from that well; if 2 wells are represented collect at least 3 samples from each well; if 3 or 4 wells are represented collect at least 2 samples from each well; and if 5 or more wells are represented collect at least 1 sample from each well.

Monitoring must be conducted at the raw water tap on the well(s) within 24 hours of receiving this notice.

Select the Site Code and Sample Location from the list of your treatment plant(s) and well(s) below: Enter in the "Site Code" box and "Definite Location of Sample" box on the bacti report form exactly as shown.

WTP:	Site Code	Location	WELL:	Site Code	Location
	99901	WTP #1 (DOWNTOWN)		A999101	WELL #10A
				A999102	WELL #11
				A999103	WELL #12A
				A999104	WELL #15
	99902	WTP #2 (MT HOLLY)		A999201	WELL #17
				A999202	WELL #18
				A999203	WELL #19
				A999204	WELL #20
	99903	WTP #3 (MORNING STAR)		A999301	WELL #16 MORNING STAR



TRIGGERED MONITORING



If a triggered source water sample is positive for *E. coli*, the State will require the system to:





Collect additional raw water samples from the well(s) within 24 hours of receiving notification of the positive result.



If the *E. coli* positive sample is from the combined raw water line prior to treatment, then collect additional raw water samples from each well that was in service at the time the TCR monitoring was conducted.

TRIGGERED MONITORING

-  **Provide Tier 1 Public Notification within 24 hours of receiving the results.**
-  **Provide notification to all systems receiving water from your system, either directly or indirectly.**

TRIGGERED MONITORING

- If any one of the additional samples is *E. coli* positive, then the system must consult with the State within 30 days and take corrective action.

ASSESSMENT MONITORING

- If directed by the State, GWSs shall conduct Assessment monitoring.
- Assessment monitoring generally consists of monthly source samples for a period of 12 months.

Sanitary Surveys

- Every 3 years for CWS; 5 years for NCWS
- Evaluate the elements
 - Source
 - Treatment
 - Distribution system
 - Finished water storage
 - Pumps, pump facilities, and controls
 - Monitoring, reporting, and data verification
 - Operator compliance with State requirements
- Identify significant deficiencies
 - Requires special notice to the public
 - Including fecal contamination of source water

GWR

Violations – Tier 2

- Treatment Technique Violations -- Public Notice
 - GWS that does not maintain 4 log virus removal at or before the first customer
 - Only for system not meeting 4 log virus removal for greater than 4 hours
 - Significant deficiency found during sanitary survey is not corrected w/in 120 days, interim measures not met or schedule not followed
 - Failure to consult w/ State w/in 30 days of notification
 - Corrective Action Plan (CAP) not completed w/in 120 days, interim measures not met or schedule not followed after fecal indicator + source sample(s)

GWR

Violations – Tier 3

- Monitoring Violations -- Public Notice
 - Failure to conduct triggered source water monitoring or to demonstrate compliance w/ 4-log virus inactivation by monitoring and reporting
 - Failure to conduct source water *E. Coli* monitoring
 - Failure to notify other PWS of TCP trigger or *E. Coli* source
 - Positive source water sample – Tier 1 Public Notice required w/in 24 hours
 - Failure to conduct source assessment monitoring for new sources

CAP




Corrective actions may include one or more of the following actions and a timetable for completion.

- **Correct any significant deficiencies.**
- **Provide an alternate source of water.**
- **Eliminate the source of contamination.**
- **Provide treatment that reliably achieves at least 4-log treatment of viruses.**
- **If 4-log treatment is installed, the system must begin compliance monitoring under the GWR.**



CAP cont.

 The system must complete the corrective actions or be in compliance with a State-approved corrective action plan within 120 days.





Arkansas Department of Health

Questions or Comments?

Gregory.Alexander@arkansas.gov

Teresa.Lee@arkansas.gov

501-661-2623